

REMARKS/ARGUMENTS

In the Office Action mailed November 17, 2008, claims 1, 2, 4, and 7-10 were rejected. Additionally, claims 3, 5, and 6 were objected to, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In response, Applicant hereby requests reconsideration of the application in view of the amendments and the below-provided remarks. No claims are canceled.

For reference, claim 1 is amended to recite a “continuous, flat AMR layer” (emphasis added). This amendment is supported by the original specification at least at page 2, lines 18-20. Claim 4 is amended to more clearly state that eight electrical contacts are arranged equidistantly at the edge of the circular AMR layer. This amendment is supported by the original specification at least by original claim 4, Figure 3, and page 5, lines 28-33. Claim 7 is amended to more clearly state that five electrical contacts are arranged equidistantly at the semicircular edge of the semicircular AMR layer. Claim 7 is also amended to remove reference number 15. These amendments are supported by the original specification at least by original claim 7, Figure 5, and page 6, lines 12-17. Claim 8 is amended to more clearly state that the electrical contacts are placed at ground potential. This amendment is supported by the original specification at least by original claim 8 and page 4, lines 23-27. Claim 11 is new, and is supported by original claims 1-3 and page 2, lines 18-20. Claim 12 is new, and is supported by original claims 1 and 5, and page 2, lines 18-20. Claim 13 is new, and is supported by original claims 1, 5, and 6, and page 2, lines 18-20.

Allowable Subject Matter

Applicant appreciates the Examiner’s review of the claims and determination that claims 3, 5, and 6 recite allowable subject matter. In particular, the Office Action states that claims 3, 5, and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

For reference, new claim 11 includes all of the limitations of original claims 1, 2, and 3. Claim 11 also includes a limitation that the AMR layer is continuous. Consequently, Applicant submits that claim 11 is also allowable. New claim 12 includes all of the limitations of original claims 1 and 5. Claim 12 also includes a limitation that the AMR layer is continuous. Consequently, Applicant submits that claim 12 is also allowable. New claim 13 depends on claim 12, and includes all of the limitations of claim 6. Consequently, Applicant submits that claim 13 is also allowable.

Claim Rejections under 35 U.S.C. 112

Claims 4, 7, and 8 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. In particular, claims 4, 7, and 8 were rejected because they include the term “in particular.”

In regard to the rejection of claim 4, Applicant submits that claim 4 has been amended to remove the phrase “in particular” and to clarify that eight electrical contacts are arranged equidistantly at the edge of the circular AMR layer. Accordingly, Applicant respectfully requests that the rejection of claim 4 under 35 U.S.C. 112, second paragraph, be withdrawn.

In regard to the rejection of claim 7, Applicant submits that claim 7 has been amended to remove the phrase “in particular” and to clarify that five electrical contacts are arranged equidistantly at the edge of the semicircular AMR layer. Accordingly, Applicant respectfully requests that the rejection of claim 7 under 35 U.S.C. 112, second paragraph, be withdrawn.

In regard to the rejection of claim 8, Applicant submits that claim 8 has been amended to remove the phrase “in particular” and to clarify that the electrical contacts are placed at ground potential. Accordingly, Applicant respectfully requests that the rejection of claim 8 under 35 U.S.C. 112, second paragraph, be withdrawn.

Claim Rejections under 35 U.S.C. 102 and 103

Claims 1 and 8 were rejected under 35 U.S.C. 102(e) as being anticipated by Doescher (U.S. Pat. Pub. No. 2002/0149358, hereinafter Doescher). Additionally, claims

2, 4, 9, and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Doescher. However, Applicant respectfully submits that these claims are patentable over Doescher for the reasons provided below.

Independent Claim 1

Claim 1 as amended recites “the sensor device comprises a continuous, flat AMR layer” (emphasis added).

While the details of the specification are not read into the limitations of the claim, it may be useful to refer to the specification of the present application for a contextual understanding of the limitations recited in the claim. The specification of the present application distinguishes the continuous AMR layer from the “meandering resistors of a Wheatstone Bridge” as used in Doescher at page 2, lines 18-20. This continuous AMR layer improves performance over the structure described in Doescher as “undercuts at the edge of the AMR layer have virtually no effect on the measurement result since the length of the edge compared to the surface area of the AMR layer is significantly smaller than in the case of the known meandering structures of the Wheatstone bridge.” Page 3, lines 3-7. Undercuts are common manufacturing defects and, as described above, these defects impact measurement results when using sensors based on meandering structures.

Doescher does not disclose a continuous AMR layer. Doescher merely discloses the use of “two DC separated sensor units 40, 42 one of which is aligned parallel to the chip sides (cos bridge) and another one is arranged at an angle of 90° thereto.” Doescher, paragraph 43. Each sensor unit includes “MR elements,” each of which is made up of several “anisotropic magnetoresistive strips 80 which are arranged always parallel to each other within each MR element 60, 62.” Doescher, paragraphs 46-47. An embodiment of an arrangement of sensor units and magneto resistive strips in a sensor is shown in Figure 2 of Doescher.

The sensor using strips of AMR material aligned to a particular angle is different from the continuous AMR layer recited in claim 1 because the sensor does not use a continuous layer. Rather, Doescher discloses meandering structures arranged at particular locations. The meandering structures in Doescher suffer from measurement

errors due to manufacturing defects as described above. Doescher does not disclose using a continuous AMR layer, as recited in claim 1.

For the reasons presented above, Doescher does not disclose all of the limitations of the claim because Doescher does not disclose a continuous AMR layer, as recited in the claim. Accordingly, Applicant respectfully asserts claim 1 is patentable over Doescher because Doescher does not disclose all of the limitations of the claim.

Dependent Claims

Claims 2, 4, 9, and 10 depend from and incorporate all of the limitations of independent claim 1. Applicant respectfully asserts claims 2, 4, 9, and 10 are allowable based on allowable base claims. Additionally, each of claims 2, 4, 9, and 10 may be allowable for further reasons.

New Claims

New claims 11-13 incorporate all of the limitations of claims deemed allowable in the Office Action. Specifically, claim 3 was deemed allowable if rewritten in independent form, and depended upon claims 1 and 2. Claim 11 is an independent claim incorporating all of the limitations of claims 1, 2, and 3. Claim 5 was deemed allowable if rewritten in independent form, and depended upon claim 1. Claim 12 is an independent claim incorporating all of the limitations of claims 1 and 5. Claim 6 was deemed allowable if rewritten in independent form, and depended upon claims 1 and 5. Claim 13 is a dependent claim depending upon claim 12 and incorporating all of the limitations of claim 6. Since these claims incorporate all of the limitations of allowable claims, Applicant submits that claims 11-13 are allowable.

CONCLUSION

Applicant respectfully requests reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

Respectfully submitted,

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